DOCUMENT RESUME

ED 083 535 CS 000 768

AUTHOR	Pedrini, Bonnie C.; Pedrini, D. T.
TITLE	Predictions of College Achievement and Attrition.
PUB DATE	73
NOTE	54p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Academic Achievement; *Educational Problems; Educational Programs; Financial Support; *Higher Education; Marital Status; *Predictive Measurement; *Predictor Variables; Reading Ability; Sex Differences; Social Class; Student Employment
IDENTIFIERS	Student Attrition

ABSTRACT

Decisions are often made by administrators in higher education with regard to students and programs. Hopefully, the research literature will have a bearing on specific programs to be instituted at specific colleges. There is voluminous data and information in this field. Studies and summaries are presented for prediction of academic achievement, prediction of attrition, and factors related to academic achievement and attrition: socioeconomic level, race, sex, marital status, financial aid, employment, and special programs. The statements made are for groups, large and small, majority and plurality, and not necessarily for individuals. Also presented are references with multi-citations, including not only a specific reference but also many related references. (Author)

FILMED FROM BEST AVAILABLE COPY

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED 083535

PREDICTIONS OF COLLEGE ACHIEVEMENT AND ATTRITION

Bonnie C. Pedrini and D. T. Pedrini

University of Nebraska at Omaha, Omaha, Nebraska 68101

Abstract

Decisions are often made by administrators in higher education with regard to students and programs. Hopefully, the research literature will have a bearing on specific programs to be instituted at specific colleges. There is voluminous data and information in this field. We have attempted to subgroup the field so as to glean meanings. Studies and summaries are presented for Prediction of Academic Achievement; Prediction of Attrition; and Factors Related to Academic Achievement and Attrition: Socioeconomic Level, Race, Sex, Marital Status, Financial Aid, Employment, and Special Programs. The statements made are for groups, large and small, majority and plurality, and not necessarily for individuals. Also presented are references with multi-citations, including not only a specific reference but also many related references.

CS 000 768

PREDICTIONS OF COLLEGE ACHIEVEMENT AND ATTRITION

Table of Contents

Page Number

Prediction of Academic Achievement..... 3

Summary..... 6

Prediction of Attrition..... 6

Summary..... 9

Factors Related to Academic Achievement and Attrition.....10

Socioeconomic Level: Economically Disadvantaged.....10

Summary.....13

Minority: Race.....14

Summary.....18

Sex.....19

Summary.....21

Marital Status.....21

Summary.....22

Financial Aid.....23

Summary.....24

Employment.....24

Summary.....27

Special Programs.....27

Summary.....32

References.....33

Educational administrators have always found it beneficial in the decision making process to be able to predict behavior. The prediction of academic success and attrition has been especially important to selective institutions of higher education in their attempt to screen applicants applying for admissions. As a consequence, there has been considerable research reported concerning these topics. The research literature presented in this article has been divided into the following sections: Prediction of Academic Achievement; Prediction of Attrition; and Factors Related to Academic Achievement and Attrition.

PREDICTION OF ACADEMIC ACHIEVEMENT

As early as the 1920's it was recognized that there were many variables which could be used to predict a student's achievement in college--high school grades,[1] achievement/aptitude test scores,[2] reading ability,[3] intelligence,[4] ability to study,[5] mental health,[6] and motivation.[7] However, possibily because of their availability, researchers have tended to emphasize two measures as academic predictors--high school grades and achievement/aptitude test scores.

Using these measures, high school performance and test scores, independently or in combination, it soon became apparent that they provided variable success in predicting overall scholarship and scholarship in a particular field. Using Cooperative Test Service Scores, College Entrance Examination Board (CEEB) Verbal scores, CEEB mean scores, and the mean of secondary school (senior) final grades, Landry found considerable variation existed in the predictive ability of the various measures for the different subject matter fields and for the different colleges studied.[8] Nelson concluded that when all students were considered, the Denny Reading Test seemed superior to English tests and to high school

content exams for the prediction of scholarship;[9] while Schmitz found that individual tests, in a battery, were approximately of equal value in predicting college success.[10] Preas reported that high school records were generally the best predictors of college grade point average (GPA), English GPA, and mathematics GPA; but that Scholastic Achievement Test (SAT) scores were specifically the best predictors of college GPA.[11] Cole presented information gathered from 100 colleges and universities which indicated that high school subject-area grades were more related to college subject-area grades than were American College Test (ACT) scores, although the ACT scores remained closely related to overall academic success.[12] Loeb and Mueller compared the first-term GPA's of 5,300 freshmen at the University of Illinois with their predicted GPA based on ACT Composite (ACT:C) scores, high school percentile rank (HSPR), and a computed high school discrepancy score. They found that the ACT:C and HSPR were equal in correlating with GPA and the best two-predictor combination for GPA was HSPR plus ACT:C.[13] In 1970, the Commission on Tests,[14] stated that "for a large and heterogeneous group of freshmen, the combination of high school grades and aptitude test scores will usually predict about two-thirds of their freshmen grade-point averages within half a letter grade or so."[15] Thus, conflicting reports were and continue to be published concerning the predictive value of specific and general area achievement/aptitude tests and high school grades for college success.[16]

Many studies which reported using achievement and/or aptitude tests to predict academic success found verbal factors to be extremely important.[17] These verbal factors involved some type of reading skill. Consequently, a large number of studies concentrated on the predictive value of reading, per se.[18]

The relationships between and among general and specific reading ability and skills and academic achievement in college are not clear. At a midwestern liberal arts college, Wellington reported that the most academically successful men were more likely to make higher scores on the Ohio State Psychological Exam and on the vocabulary and reading comprehension sections of the Nelson Denny Reading Tests than were the most academically unsuccesful men.[19] In a study using a group of dean's list students and a group of students on academic probation, no significant differences were found between the groups for reading rate or vocabulary. However, the former group was found to be significantly superior in verbal comprehension.[20] Neville compared good and poor readers and noted that "predictions of success or failure among poor readers could be made with limited accuracy."[21] In her study of 163 Boston University freshmen, Lanigan's data revealed that the Minnesota Speed of Reading Test did not differentiate well between high and low achieving students.[22] Thus, while reading appears to be an important variable in college success, its predictive validity is questionable.

Recent research has tended to emphasize using nonacademic achievements or nonintellectual correlates with high school academic achievements and/or standardized test scores in the prediction of college success.[23] Conflicting results have been reported in the literature. Fudge,[24] and Lunneborg and Lunneborg[25] determined that biographical information greatly enhanced the accuracy of prediction of academic college performance. Beanblossom's study of 760 freshmen at the University of Washington showed that achievement/aptitude records tended to be more predictive of success in the areas of engineering and natural science than were the biographical predictors. The opposite was true in the areas of education and humanities.[26]

Using an interest scale and a motivation questionnaire, it was reported that neither contributed significantly to the accuracy of prediction of freshmen GPA based on high school grades and scholastic aptitude scores.[27] Spencer and Stallings determined that nonintellective data obtained from the Student Profile Section of the ACT added virtually nothing to ACT aptitude scores in predicting first-semester GPA.[28] Thus, there is little agreement as to which nonacademic achievements or biographical data should be considered, and the degree to which prediction is improved, if any, by the inclusion of such information.

In summary, the research concerned with the prediction of college success has considered many single and multiple predictor variables. The literature is replete with reports studying the predictive validity of high school grades and achievement/aptitude test scores. Measures of reading ability, and more recently, biographical data, are also factors commonly studied for predictive purposes. While many factors are important, it appears that for the majority of students applying for college entrance, "the high school average (or class rank) is. . .the best single predictor of college grades; aptitude test scores . . .add appreciably to the accuracy of that prediction, and scores on tests in specific subject-matter areas add only a modest amount of predictive power to the combination of high school grades and aptitude test scores."[29]

PREDICTION OF ATTRITION

High attrition rates are costly to students and to institutions themselves, in terms of money and time and effort.[30] Attrition rates also indicate, in part, the extent to which universities are not meeting student needs. Consequently, the study of attrition has been an important aspect

of administration at institutions of higher education.

The research literature concerned with college attrition has typically identified distinguishing characteristics of dropouts and persisters, rather than predicted attrition, per se. Recently, researchers have tended to subcategorize dropouts to account for transfers and students who withdrew in good or poor academic standing. Several variables have been identified as being related to attrition--nonintellective factors;[31] satisfaction with the institution, [32] its programs;[33] student personality;[34] biographical data;[35] high school performance;[36] college performance;[37] and achievement/aptitude test scores.[38] As with the prediction of academic achievement, the literature on attrition is replete with studies investigating past performance and test scores.

A number of reports considered the relationships between attrition and high school grades and achievement/aptitude test scores; many studies compared dropouts and persisters on these variables. In a study of Clemson University students, Hardie and Anderson considered SAT scores and their relationship to attrition. They found that the first year dropouts tended to score low in mathematics; second year dropouts scored equally in mathematics and verbal ability; and third year dropouts scored low in verbal ability.[39] Blanchfield's study of college cropouts at Utica College indicated that dropouts had lower high school ranks and lower GPA's than the successful students. He also noted that high school average and Sat scores did not differentiate between the two groups of students.[40] Chase reported no significant differences between students who dropped out or persisted through their junior year in terms of SAT scores, but high school rank was positively related to persistence.[41] Trapp, Pailthorp, and Cope,

indicated that dropping out seemed to be related to lower test scores.[42] A comprehensive national profile developed from data collected at 251 representative colleges and universities revealed that high school grades and scores on standard tests of academic ability, singly or in combination, were the best predictors of college persistence.[43]

College performance or grade point average (GPA) has been shown to be a major determinant for students to drop out.[44] Studying freshmen students during the 1956-57 academic year at twenty institutions of higher education in the United States, Iffert and Clarke reported that more than forty-five percent of the dropouts attributed their withdrawal to academic difficulties.[45] Conner was interested in freshmen attrition at Southern Methodist University. He found that for the 100 students studied, freshmen GPA was an important factor in attrition; those with low grade point averages tended to drop out.[46] Baber and Caple's data demonstrated that persisters had significantly higher first year GPA's, School and College Ability (SCAT) scores, and high school grades than did non-persisters.[47] Cope[48] and other researchers[49] have also reported poor grades to be a pressing reason for dropping out of school.

Poor college performance does not account for all dropouts. Consequently, many researchers attempted to identify factors which distinguished between adequately and inadequately achieving dropouts and/or persisters. High school records and test scores were most often investigated in this regard. Vaughan studied SAT scores of students who withdrew voluntarily, were dismissed because of low grades, or persisted at the University of San Francisco. He found that those who withdrew voluntarily, averaged SAT-Mathematics and Verbal scores fifteen points lower than the persisters' scores; while the SAT scores of the dismissed students averaged

forty-five points lower than the persisters' scores.[50] A study of 275 men and 134 women at the University of Illinois divided students into the following categories: graduates (G)--graduated in five years; achieving withdrawals (AW)--had a C average or better; nonachieving withdrawals (NW)--were on probation or without grades when they withdrew; and, failures (F)--were dismissed for academic failure. For high school percentile rank (HSPR) and American College Test (ACT) scores there were no significant differences between the graduates and the achieving withdrawals, nor between the nonachieving withdrawals and the failures. However, both the G and AW groups had higher ACT scores and HSPR's than the NW and F groups.[51] Hoffman compared three groups of students at Manchester College: those who remained, those who transferred, and those who withdrew. He found that the continuers and transfers were similar in aptitude, educational background, and college academic performance. However, the withdrawers differed from these groups in that they had lower high school ranks, lower SAT-Mathematics scores, and lower GPA's. The three groups did not differ on personality tests or SAT-Verbal and Total scores.[52] Additional studies have also revealed that students who drop out rather than transfer tend to have lower high school grades and lower achievement/aptitude test scores than students who persist.[53]

In summary, the majority of data has suggested that students who persist, transfer, drop out, or flunk out can be discriminated on the basis of high school grades (or rank) and/or standardized test scores. These results were not unexpected. Since student college performance, that is, GPA, is a major reason for withdrawal[54] and high school and test performances are relatively reliable predictors of college achievement,[55] it follows that these measures should be able to distinguish between high and

low achieving students who withdraw or persist. In conclusion, college GPA, high school grades, and achievement/aptitude test scores have been identified as variables strongly related to college attrition, "but no one or two neatly packaged predictors of attrition have been found."[55]

FACTORS RELATED TO ACADEMIC ACHIEVEMENT AND ATTRITION

The research literature has generally indicated that 1) high school grades and standardized test scores are the best predictors of academic achievement in college and that 2) college grade point average is a major determinant of college attrition. While these relationships are relatively stable for the majority of students, they appear to waver with students having culturally different backgrounds.[57] There are many other factors which may be instrumental in altering the validity of high school performance, entrance examinations, and college performance.[58] This section will discuss the effects of some of the related factors:

Socioeconomic Level: Economically Disadvantaged

Minority: Race

Sex

Marital Status

Financial Aid

Employment

Special Programs

Socioeconomic Level: Economically Disadvantaged

Much of the research considering student socioeconomic level focuses on students from lower socioeconomic levels; many of these disadvantaged students belong to minority groups.[59] It is difficult to

separate the effects of social class from racial and/or ethnic considerations. Consequently, much of the research literature in this section is appropriate for minority students as well.

Socioeconomic level has been shown to be related to student: choice of college;[60] college attendance;[61] standardized test scores;[62] college success;[63] and college persistence and withdrawal.[64] Many of the studies in this area compare students from higher income and lower income families on the same variables. The research findings suggest that the prediction on college success may be enhanced if student socioeconomic level is considered.

The accessibility of higher education is a definite concern when discussing economically disadvantaged persons.[65] Lane indicated that poor (and minority) students are typically sparsely represented and participate "largely through special programs with group specific dispensation."[66] Trent's five year longitudinal study of 10,000 high school seniors, representing thirty-seven schools in the country, revealed that socioeconomic status was more important than ability in determining college entrance.[67] A similar study of 9,000 Wisconsin high school seniors demonstrated that high socioeconomic class was more important than high intelligence in determining college attendance.[68] Nam's paper analyzed social class disparities in various educational programs. He found that students from high income homes were highly overrepresented in the universities.[69] However, this may not be as true as it once was because of the increased distribution of financial aid awarded on the basis of need.[70]

Standardized test scores of students from low income families have been compared with those of high income students; variable results have been reported. Merritt's investigation of work-study students revealed

that the students from low income families had significantly lower ACT scores than the comparison group of upper socioeconomic Greek fraternity and sorority students.[71] The relationship of family income to several student variables was studied by Baird. He used a representative sample of three percent of the 612,000 college-bound students tested by the American College Testing Program during a one year period. His data indicated that the lowest ACT scores in the sample were for the students with the lowest family incomes. However, those same persons had the highest average high school grades. He concluded that his findings demonstrated a tendency for this group to overachieve.[72] Rhodes and Caple compared 233 Educational Opportunity Grant (EOG) students with 231 non-EOG classmates on School and College Ability Test (SCAT) scores and high school rank. Their data suggested that the students from low socioeconomic backgrounds did as well as their counterparts from high socioeconomic backgrounds.[73] DeBlassie and Boswell discussed the problems of disadvantaged students and the use of entrance tests with such students. They reported that standardized tests were negative experiences for these students and, therefore, not very reliable.[74] Thus, it appears that low socioeconomic status may be associated with low scores on general achievement/aptitude tests.

Socioeconomic level has been shown to be related to college achievement. Previous research studies documented that high grades were associated with high income family background.[75] Recent studies have reported less uniform results. Binford attempted to study the relationships between socioeconomic status, academic achievement, and intelligence. She found that a significant relationship existed between intelligence tests and socioeconomic status; between intelligence tests and academic

achievement (grades); and between socioeconomic status and academic achievement, with intelligence controlled.[76] A demographic study of the freshmen class at Auburn University identified women from low income families as receiving the best grades and men from high income families as achieving the worst grades.[77] Worthington and Grants's analysis of factors of academic success for 1270 men and 990 women at the University of Utah disclosed that family income had a main effect on college GPA.[78] While in a comparison of public and parochial high school graduates, college freshmen GPA was shown to have no significant correlation with socioeconomic status.[79] Miller, in his comprehensive review of the literature, concluded that social class was one of the least influential variables affecting academic performance. With regard to achievement, he posited that

> social class per se does not in itself account for differences . . .what matters is not the social class from which the person originates but rather it is the characteristics of the person and his social environment which influence his attainment.[80]

Low socioeconomic background has been shown to be related to dropping out.[81] Sewell analyzed data gathered from 9,000 students grouped according to socioeconomic status (SES) and ability; he noted large differences between the groups in their chances of graduating from college. In the lowest ability group the probability of graduating was nine times greater for high SES students than low SES students.[82] Thus, it appears that high income students have a greater chance of remaining in school than low income students.

In summary, it appears that socioeconomic level is directly related to college accessibility--low income students are less likely to attend college. Generally, the research literature has shown that low socioeconomic

level is associated with: lower general achievement/aptitude test scores; variable college success; and a higher dropout rate.

Minority: Race

The research literature discussing the prediction of college success has often considered minority-background as a variable. This section deals primarily with racial minorities, predominantly Negroes. Minority persons are disproportionately represented at the lower end of the economic continuum.[83] The distribution of 1968 family income was:

	White	Non-White
under $5,000	20%	45%
$5,000-$9,999	38	35
$10,000-14,999	26	15
$15,000 and over	16	6

Similar results are found for the distribution of family income of Black college students. A 1969-70 survey of 3,363 college sophomores indicated that "83 percent of black college students come from families earning less than $10,000 per year, while 36 percent of white students come from such backgrounds."[85] In 1970, Brandson reported comparable results: 75 percent of Black freshmen and 30 percent of White freshmen came from families having incomes under $8,000.[86] Therefore, Black students are often equated with disadvantaged students, especially since lack of money is one of their major problems.[87] As a result, much of the literature discussing economically disadvantaged students is appropriate for racial/ethnic minority students.[88] However, though the effects of social class and ethnicity on academic performance appear highly correlated, several reports suggest ethnicity (race) accounts for a greater part of the variance.[89]

Gordon traced the history of accessibility of higher education for Blacks and noted that progress had been made since the middle 60's and

the development of the National Defense Education Act.[90] However, as of the fall of 1970 it was estimated that only 5.8 percent of the students in higher education were Black Americans.[91] This represented 2.0 percent of the Black American population.[92] Comparable figures for White students were 93.2 percent,[93] and 4.3 percent,[94] respectively. While racial considerations may rarely deny admission to an institution today, it has been suggested that there are indirect barriers which prevent access to higher education,[95] for example, selection criteria.[96]

Institutions of higher education have traditionally used standardized tests and high school grades as part of their selection criteria because they have been relatively reliable predictors of college success.[97] However, admissions officers have been warned that tests are culture bound[98] and may have built in sex and ethnic biases.[99] A search for Black academic talent, initiated with the development of the National Scholarship Service and Fund for Negro Students, ended in failure because of the limited number of students who could meet the traditional admission standards.[100] Hall noted that Negroes showed significantly lower aptitude and achievement scores than Whites, but there were no significant differences between the two groups in terms of motivation.[101] In a study of test construction, Green concluded that test item selection was biased against persons belonging to certain racial and ethnic groups, that is, those groups not similar to the majority of persons in the tryout samples.[102] Crossland stated that

> virtually every test that purports to measure educational aptitude or achievement reveals that the mean of the scores of minority youth is about one standard deviation below the mean of scores of the rest of the population.[103]

Bowles and DeCosta presented similar data.[104] Consequently, the predictive

validity of standardized tests for minority college students has been questioned and studied.

Several reports have suggested that even though tests may be biased against minority students, they are still valid predictors of these students' achievement.[105] Pandey demonstrated that School and College Ability Test (SCAT) percentile ranks of Blacks and Whites were significantly different (in favor of Whites) and in the same direction as the students' mean GPA's.[106] The Kendrick Report included data which indicated that the average SAT verbal scores of Negroes were considerably below those of Whites. However, since many colleges evaluated students on their verbal ability, the test scores were able to predict the grades of Negro students.[107] Stanley and Porter[108] presented data which supported findings of previous studies[109]--that the grades of Negro students were as predictable as those of Whites when no special treatment was involved. While Flaugher[110] and others[111] reported several sources of test bias against minority groups, for example, test content not relevant to their background -- they also acknowledged that standardized tests seemed to predict validly academic achievement regardless of student background.

Many investigative reports of the prediction of success of minority students have considered the type of institution attended, in part, because Negroes attending traditionally White institutions tend to have significantly higher test scores than Negroes attending traditionally Black institutions.[112] Stanley,[113] Roberts,[114] and Astin[115] determined the predictive power of standardized tests for Negroes at Black universities was the same or better than at White universities. Studying Negroes and non-Negroes, Temp investigated the predictive ability of the SAT at thirteen integrated institutions. The separate regression equations for

Blacks and Whites differed significantly at ten of the thirteen institutions. Regression equations suitable to the majority of students at a given college tended to overpredict (inaccurately predict higher grades) for the Blacks at twelve of the thirteen institutions.[116] Similar studies at traditionally White universities yielded comparable results.[117] Davis and Temp studied SAT bias with regard to GPA prediction for Blacks and Whites at nineteen universities. At six colleges, the predictive validity of the SAT was biased against Blacks; at seven colleges the bias was in favor of Blacks.[118] Reviewing SAT scores at integrated colleges, Clark and Plotkin concluded that they either failed to predict or underestimated the performance of Negroes.[119] Borgen considered the predictive relationships between National Merit Scholarship Qualifying Test (NMSQT) scores and freshman grades for Blacks at five types of colleges. When grouped according to type of college attended, statistically significant correlations were reported However, when all students and colleges were studied as one combined group, a zero order correlation resulted between NMSQT scores and grades.[120] Thus, the results are contradictory, however, it appears that the predictive power of standardized tests for Blacks is greater at Negro institutions and at White institutions which develop separate prediction equations for Blacks and Whites.

A few investigators have considered Black student attrition. Jaffe and Adams determined that "only 40-50% of non-whites who entered college completed their undergraduate study."[121] Egerton[122] and Astin[123] concluded that the attrition rate for Black freshmen was usually higher than for White freshmen. However, Clark and Plotkin reported that the Negro dropout rate at segregated colleges was about equal to that of White students.[124] Davis, Loeb, and Robinson found that significantly more

Negroes than non-Negroes had withdrawn from the University of Illinois after one and two years of attendance.[125] Astin reported that the predicted attrition rate (based on test scores) for White students tended to be accurate, but Black students at White institutions had dropout rates below those predicted.[126] Perhaps Black attrition is related to the racial makeup of the student body, but it is problematic, and may be related to special support programs.

In summary, minority access to higher education has been limited indirectly by the use of traditional selection criteria, especially standardized tests scores.

> Such tests are empirically established measures for the prediction of academic performance, though they are often assailed as carrying a built-in cultural bias. The charge of bias is true in that the tests are related to dominant, i.e., white, cultural patterns.[127]

But it is also true that these tests generally tend to accurately measure a person's ability to do quality work in college.[128] "In other words, culturally biased or not, the tests are all too accurate in their measurement of any handicap with respect to college preparation."[129]

It is apparent that the predictive validity of entrance tests for Black achievement and attrition varies with the racial makeup of the institution's student body and the population employed to develop regression equations. The research literature generally suggests that Negroes at predominantly White institutions tend to: 1) obtain higher test scores than Negroes at traditionally Black institutions; 2) obtain lower test scores than Whites at predominantly White institutions; and 3) obtain grades in keeping with their test scores, that is, lower grades than Whites,[130] if they are not participating in special programs. On the basis of the research literature, race should be considered when attempting

to predict success at college. Separate regression equations for Blacks and Whites have been recommended to enhance the validity of predictions made from standardized test scores.[131]

Sex

Several studies have been reported which indicated sex differences in scholastic abilities[132] "but these have generally been regarded as evident sex differences in acquired aptitudes, for example, women do better in language, men in arithmetic, etc."[133] College attendance has been shown to be related to sex. Adams and Meidam indicated that among daughters of blue collar workers the chances of attending college diminished with each additional brother.[134] Young[135] and Walster, Cleary, and Clifford[136] determined that college and university admissions procedures discriminated against women, especially at the low ability levels.[137]

Studies which investigated various criteria for predicting academic success have revealed sex differences.[138] Borup disclosed that the ACT had a built-in sex and ethnic bias in favor of male, Anglo-Americans,[139] whereas Foster and Jenkins demonstrated that women earn higher English scores and lower math scores than men on the same test.[140] Boyd found that correlation coefficients for men and women ranged from .400 to .581 and from .379 to .609, respectively.[141] Irvine,[142] Lindsay and Althouse,[143] and Michael and others,[144] reported that correlations between traditional predictors and college success were higher for women than men. Correlation coefficients between SAT scores and college grades were studied over a three year period for freshmen who attended predominantly non-Negro co-educational colleges. Analyses of variance indicated that the three main effects of sex, year, and college made significant contributions to the variance,

with sex contributing fifty percent. The correlation coefficients obtained were consistently higher among women.[145] Flora found that the academic success of college men could be predicted from high school averages, but in order to predict the success of college women, verbal test scores were necessary.[146] Siegelman presented data to support the conclusion that the predictive validity of SAT scores increased for women over a four year period, but the test scores were not valid for males over the same period. However, high school average predicted equally well for both sexes.[147] A similar study by Bowers, using SCAT scores, high school percentile rank, and first semester GPA, revealed different conclusions, namely, SCAT and HSPR were better predictors for men and women, respectively.[148] Langen found that separate regression equations for each sex were no more efficient than the single traditional formula in which sex was one variable.[149]

Sex also appears to affect the degree to which tests scores are able to predict college grades for disadvantaged and minority students. Buszek determined that the California Achievement Test was the best predictor for Negro men and the total group; whereas the Otis IQ test was the best predictor for Negro women.[150] Using disadvantaged minority students, Cherdack reported that SAT-Verbal correlations with college GPA were generally higher for minority and White females than for males.[151]

In terms of college success, several studies have demonstrated that women receive higher grades relative to their ability[152] and are more likely to graduate within a four year period[153] than men. Hill's five year longitudinal study of attrition at the University of Texas indicated that more women than men left voluntarily but more men than women were dismissed for poor academic achievement, that is to say, flunked out.[154]

Cope reported on the differences found between men and women as they related to attrition. Women who dropped out tended to be less cultured, less physically attractive, and less verbally inclined. These factors seemed to be unrelated to attrition among men.[155] Several reports have recorded that women had higher dropout rates than men.[156]

In summary, sex differences exist in college attendance, academic prediction, and college success. Low ability women find it more difficult to enter institutions of higher education. Women in college, in terms of academic average, tend to do better than men but this is probably the result of selection procedures. Women also tend to have higher dropout rates. On the basis of the research literature, predictions of achievement and attrition may be enhanced when sex is taken into consideration.

Marital Status

The incidence of married undergraduate students on campus is approximately 20-25%[157] and has prompted several researchers to investigate the effects of marital status on college success. As a result, marital status has been shown to be related to college: attendance,[158] achievement,[159] and attrition.[160]

Marriage seems to inhibit college attendance. Iffert and Clarke reported that females who were accepted to a university or college but did not attend were typically prevented by marriage.[161] Watley indicated that marriage was definitely a factor in college attendance, especially for women and Whites. (He used the word non-Blacks.) In this instance, sex was more important than race, that is, a married woman, regardless of race, was less likely to attend college than a married man; and marriage

seemed a greater barrier for White men than Black men.[162] Baver's survey of 324 institutions supported Watley's data, namely, that Blacks were more likely to be married than Whites.[163] The majority of women whose husbands are students do not attend school.[164] Among high ability women, marriage may be delayed to allow for education.[165]

Marriage does not seem to have a negative effect on achievement. Eshleman and Hunt revealed that lower class men often felt that marriage was helpful in achieving good grades.[166] Klein and Snyder's investigation disclosed that marriage was positively related to achievement.[167] Watley reported that grades were unaffected by marital status with one exception--single White males made higher grades than their married comparisons.[168] Thus, married students generally may be expected to earn grades which are comparable to those of single students.

Financial[169] and emotional[170] problems are often associated with student marriages. Consequently, it is not surprising that marriage seems to be related to attrition. The majority of studies indicate that marriage is a frequent reason for dropping out[171] and that more married than single students discontinue their education.[172]

In summary, marital status does not seem to have a significant effect upon achievement but is strongly related to college attendance and attrition. Marriage is negatively associated with college attendance, especially for women and more so for Whites than Blacks. Married students are also more apt to drop out, but this may be associated with financial and emotional difficulties.

Financial Aid

Lack of money has been identified as one of the barriers to higher education and as a significant variable related to attrition.[173] For example, in a study of twenty universities, it was found that two-thirds of the students who were admitted but did not enroll, were unable to enroll because of financial reasons.[174] Fox presented questionnaire data from 2,037 students who had withdrawn from twenty-one liberal arts college in the same one year period. He reported that financial considerations was one of the most common reasons stated for withdrawal;[175] Demos,[176] Kester,[177] Yuker, Lichtenstein, and Witheiler,[178] Iffert,[179] and Summerskill[180] reported similar results.

Although once distributed on the basis of scholarship, financial aid is presently awarded primarily on the basis of need.[181] Billions of dollars in federal money are appropriated for students each year.[182] Consequently, the effectiveness of financial aid has been investigated.

A number of studies have considered the relationships between financial aid, college success, college presistence and withdrawal. Kinney's doctoral dissertation at Washington State University investigated the effect of scholarship aid on academic achievement and persistence. Two groups of students (scholarship aid recipients, and nonrecipients) were equated in number and matched for age, sex, marital status, first year cumulative GPA, total credits earned, and major field of specialization. No significant differences in achievement or persistence were found between the groups. The variables of amount of scholarship aid and level of financial need were not significant for either achievement or persistence.[183] A study of students from different socioeconomic

backgrounds disclosed that the low income group had a significantly higher persistence rate than that of the freshmen class. However, it could not be determined if persistence was related to social class, or to the fact that all low income students were receiving Educational Opportunity Grants.[184] Astin and others compared disadvantaged students (family income below $6,000) and nondisadvantaged students attending the same university. While both groups had comparable high school and college records, different factors affected their persistence and satisfaction. The disadvantaged students were more likely to persist if they were recipients of some kind of financial aid.[185] A Hofstra University study also demonstrated that financial aid seemed to enable students to persist as the percentage of withdrawers receiving aid was much smaller than the percentage for the entire student body.[186]

In summary, financial aid is a major means of enabling greater student access to higher education. It appears that financial aid may not directly enhance academic achievement but students receiving assistance exhibit a higher persistence rate. It is important to note that low income students exhibit a higher persistence rate when they have been awarded financial aid.

Employment

Several reports have suggested that the majority of students are employed at some time during their undergraduate careers.[187] As a result, researchers have investigated the effects of employment, the number of hours employed, and the type of employment, on student achievement. Many low income, financial aid recipients are employed;[188] however, not all employed students are financial aid recipients.[189] Consequently, the main

effect of employment, as well as the interaction effects of financial aid and employment on college achievement have been investigated. A discussion of employment and college success is presented prior to a discussion of the limited literature on the interaction effects of aid, work, and college employment.

Part time work, per se, does not seem to affect negatively student achievement. A comparison of working (up to twelve hours per week) and non-working freshmen at the University of North Dakota determined that employment was not significantly related to first semester grade point average.[190] Hay and Lindsay at Pennsylvania State University conducted two studies involving employed and unemployed baccalaureate degree and associate degree students. Study I data identified employed men and women baccalaureate degree students as earning lower GPA's, relative to their aptitude, than their unemployed comparisons. Study II findings revealed no significant differences between the GPA's of any of the groups.[191] Students divided into three ability groups on the basis of high school rank and SCAT scores were studied at the University of Missouri. Henry reported that the working and non-working students did not differ in first semester academic performance in any of the ability groups.[192] Baron found that the chances of student college success were greater if the student planned to work part time.[193]

The majority of the research literature indicates that the number of hours a student works and the relevancy of his job to his major course of study affect academic achievement. A study involving full-time students compared those persons employed for fifteen or less hours, those employed for sixteen or more hours, and those unemployed. Students who worked were able to achieve better grades if they worked in a field relevant to their major. Employed students were able to maintain grades

comparable to unemployed students if they limited employment to fifteen, or less hours; working more than fifteen hours per week resulted in poorer grades.[194] Similar results were reported by Hay and Lindsay,[195] Augsberger,[196] and Hay, Evans, and Lindsay.[197] Thus, part time employment, relevant to one's major, of less than sixteen hours per week does not have a negative effect upon college performance, and in some cases has been shown to facilitate achievement.

Financial assistance may involve employment, for example, work-study programs;[198] consequently, the combined effects of employment and financial aid on college performance have been researched. The effects of holding a work-study job (of not more than fifteen hours per week) on the academic achievement of first semester freshmen at the University of South Carolina were studied by LeGrand, Piercy, and Panos. Twenty-seven work-study students were matched with twenty-seven non-working students for the following variables: predicted GPA, sex, college enrolled in, number of hours carried, residency, and marital status. No significant difference between the mean GPA's of the work-study and non-working students was reported.[199] Kelly's dissertation considered the effects of various types of financial aid (including those which required employment) on academic achievement. He found the achievement of students whose financial aid involved part time work did not differ significantly from those students whose assistance did not include employment. However, those financial aid recipients with gift aid tended to achieve higher academically.[200] His findings are not surprising since most gifts were awarded on the basis of scholarship, as well as need.[201] Kaiser and Bergen matched three groups of first semester freshmen (employed financial aid recipients, unemployed financial aid recipients, and unemployed persons not receiving financial aid) for sex, ACT Composite scores, high school GPA, and college semester

hours completed. They reported that the three groups did not differ significantly in terms of college GPA.[202] Thus the achievement of financial aid recipients is not impaired by a moderate amount of employment.

In summary, a large number of students are employed during their undergraduate years. Many low income financial aid recipients are employed part time with no ill effects in terms of grade point average. It appears that part time employment of fifteen hours or less does not have a negative effect on achievement, regardless of whether a student is receiving some type of financial assistance or not.

Special Programs

Many colleges and universities have special programs for regular students with deficient skills. These programs typically involve improving various reading skills--vocabulary, comprehension, speed, and study skills.[203] Many disadvantaged/minority students are educationally deprived.[204] Consequently, the increased recruitment and admission of these students during the 1960's[205] led to the development of many more special programs.[206] The programs for disadvantaged/minority students usually follow set approaches,[207]--the remedial approach and/or the "cultural approach" which often includes community field projects and an emphasis on Black culture and urban problems.[208] The relative success of special programs and the predictive ability of tests for disadvantaged minority students enrolled in these programs will be discussed in this unit.

College reading program evaluations use various criteria, for example, improved reading skills,[209] courses failed,[210] grade point average,[211] grades in verbal courses,[212] drop out rate.[213] Extremely variable results have been reported with regard to the programs' success depending

upon the criteria considered;[214] the methods, materials, and mechanical devices used;[215] and the permanence of gains.[216]

The special compensatory and cultural programs developed for marginal admission and/or disadvantaged/minority students have been evaluated on several criteria--attrition rate,[217] grades,[218] change in grade point average,[219] matriculation rate,[220] study habits,[221] number of courses dropped,[222] and social adaptation.[223] Many students in these programs are considered "high risks," thus, attrition rate is the most commonly employed criteria. The related literature seems to warrant the "high risk" descriptor for disadvantaged/minority students, as well as for marginal admission students.[224] Ziegler describes disadvantaged students as being "culturally different and intellectually, economically and socially disadvantaged."[225] Many special program recruits resent White university tokenism[226] and often feel alienated on campuses which display and perpetuate White, middle class standards and values.[227] While there is usually a period of adjustment for all freshmen, adjustment may be especially difficult for these students,[228] in part because they must often learn new and different patterns of behavior.[229] Even though financial assistance is often provided for tuition and books, money problems of everyday living must still be coped with.[230] Pressures of this nature are not conducive to learning and place these students in a tenuous position on campus.[231] Thus, dropout rate may be a good indicator of a program's success.

Programs evaluated in terms of persistence or attrition rate tend to reveal favorable results when compared to: 1) previous attrition rates of disadvantaged persons,[232] 2) attrition rates of the university as a whole,[233] 3) initial number of program participants,[234] and 4) attrition

rate of a control group.[235] However, there are some studies which were considered unsuccessful with regard to attrition but were successful on other criteria,[236] for example, number of courses dropped.[237]

Programs which considered the academic achievement of students in special programs report variable results. Hendrix found that after one semester of special advising, pariticpants in the program were able to achieve GPA's which were higher than any of the control groups, that is, high risk students not participating in the program, usual freshmen who attended a pre-orientation session, and usual freshmen who did not attend the pre-orientation session.[238] Raymer reported that experimental students enrolled in a compensatory program for one trimester had significantly lower GPA's the following trimester when they were no longer receiving supportive academic services. She suggested that the decline in mean GPA's for the experimental group was attributable to the lack of academic supportive services for the second trimester, even though almost all subjects received financial aid both trimesters.[239] Somerville's study of Berkeley's Educational Opportunity Program revealed that in the first year of the program forty-five percent of the high risk freshmen were able to achieve C or better averages; fifty-one percent of all entering freshmen had comparable grades.[240] Hall compared the cumulative GPA's and changes in GPA's of disadvantaged students receiving supportive services (including financial assistance) and those receiving only financial assistance. There were no significant differences between the groups in terms of: 1) GPA change for the Autumn quarter or the Winter quarter, and 2) cumulative GPA for the Autumn and Winter quarters. However, significant differences were reported between the groups for: 1) GPA change for the Spring quarter, and 2) cumulative GPA change for the Autumn, Winter, and Spring quarters.[241] Heath's investigation of the High Potential Program (HPP) directed toward

poor Blacks at Illinois State University revealed that the HPP participants who disapproved of the program the most were the most academically successful.[242] After four semesters of operation, Heinkel reported no significant differences between the GPA's of 122 special program participants and 128 control subjects.[243] Whereas Brown and others disclosed that 111 high-risk experimental subjects who received special counseling had significantly higher grades than 111 high-risk control subjects.[244] The National College of Education developed a special program for high-risk students called the National Orientation Workshop (NOW). After one term it was reported that only eleven of the thirty-six participants were on probation and most of the participants were engaged in campus activities.[245]

Several special programs for disadvantaged students are preparatory in nature and are considered successful if participants completing the course matriculate at the university. Bucklin and Bucklin,[246] Riess,[247] Pearce,[248] Freedman and Myers,[249] and Melnick[250] reported higher than average matriculation rates of disadvantaged minority students resulting from special programs. Programs evaluated in terms of study habits and social adaptation of high risk students also yielded favorable results.[251]

The prediction of achievement by traditional measures for disadvantaged minority students enrolled in special programs is difficult. Bowers' comparison of 250 disadvantaged, predominantly Black, freshmen, admitted under reduced admissions criteria, with 5,000 regularly admitted freshmen at the University of Illinois revealed that: 1) for regular courses, high school percentile rank (HSPR) and SCAT scores were more predictive of GPA for the regular than the disadvantaged freshmen, and 2) when the GPA based on regular and special courses was tabulated, HSPR and SCAT scores predicted equally well for the regular and disadvantaged

students.[252] In similar studies it was reported that standardized test scores were more valid predictors for disadvantaged special program participants' GPA's than control or regular students' GPA's.[253] Beasley investigated the prediction of academic success for 572 minority Educational Opportunities Program (EOP) participants at the University of Colorado. The ACT Composite correlated significantly ($< .05$) with first semester GPA and cumulative GPA for the total EOP participants and for the Black and the Mexican American EOP component program participants.[254] Egerton's report of "high risk" minority and poverty students stated that despite low incomes and test scores, high risk students often matched their classmates' performance.[255] Beach reported that high school grades, SAT scores, and rank in graduating class were of no use in predicting first year cumulative GPA of marginal entrants.[256] Forty-six men and thirty-two women entering a special education program (SEP) for minority students at the University of Washington were matched with forty-nine men and thirty-four women non-SEP students who were closest to them in test scores on the Washington Pre-College Aptitude-Achievement Test Battery. While the SEP group had lower test scores, both groups were "high risk." After three quarters at the university the groups' GPA's were compared. The non-SEP group performed at their predicted level; the SEP group did much better than predicted. However, intragroup GPA variation was greater for the SEP students, as was the dropout rate.[257] A study of 343 College Readiness Program students (95 percent Negro) at the College of San Mateo determined that neither high school grades nor SCAT scores were able to predict college performance.[258] Hammond and Rosick[259] and Hodges[260] reported comparable results. Cherdack's study of the predictive validity of SAT scores in a special education program revealed that the SAT Verbal was a more consistent

positive predictor for White than for disadvantaged minority students.[261] On the basis of the research literature, the prediction of success for special-program disadvantaged and/or minority participants by traditional measures is a speculative procedure.

In summary, special programs developed for regular students with minor academic deficits are often remedial and involve reading skills. Variable results are reported depending on the evaluative criteria used. Special programs for "high-risk" students, that is, disadvantaged/minority students and/or marginal admission students, are typically remedial in nature. But often disadvantaged/minority students also have programs which emphasize student cultural background. Attrition rate is the most common criterion used to evaluate special programs for disadvantaged persons; the majority of studies report impressive results (compared to the alternative of no special programs). Studies which evaluated the academic achievements (grades) of special program participants revealed variable results. It appears that while special programs are able to keep high-risk disadvantaged/minority students in school, they may not enhance these students' ability to learn independently. The predictive use of general achievement/aptitude tests is problematic with students enrolled in programs designed to offset deficits. Typically, the test scores of students participating in special programs underestimate performance.

[1]J. M. Stalnaker, "American Council Psychological Examination for 1926 at Purdue University," School and Society, 27:86-88, Jan., 1928.

[2]Stalnaker, ibid.; see also A. W. Kornhauser, "Test and High School Records as Indicators of Success in an Undergraduate School of Business," Journal of Educational Research, 16:342-356, Dec., 1927.

[3]Ibid.

[4]Kornhauser, ibid.; see also M. J. Nelson and E. C. Denny, "The Terman and Thurstone Group Tests as Criteria for Predicting College Success," School and Society, 26:501-502, Oct., 1927.

[5]W. F. Book, "How Well Can College Students Read?" School and Society, 26:242-248, Aug., 1927.

[6]Stalnaker, loc. cit.

[7]Ibid.

[8]H. A. Landry, "The Relative Predictive Value of Certain College Entrance Criteria," Journal of Experimental Education, 5·256-260, March, 1937.

[9]M. J. Nelson, "Some Data from Freshmen Tests," School and Society, 31:772-774, June, 1930.

[10]S. B. Schmitz, "Predicting Success in College: A Study of Various Criteria," Journal of Educational Psychology, 28:465-473, Sept., 1937.

[11]N. B. Preas, "A Study of the Relationship Between Selected Variables and Academic Achievement in a Community College" (North Carolina University, Department of Adult Education, Ed.D. Thesis, 1969), (Washington, D. C.: ERIC Clearinghouse on Adult Education, Oct., 1970).

[12]N. S. Cole, Differential Validity in the ACT Tests, ACT Research Report, No. 30 (Iowa City: American College Testing Program, 1969).

[13]J. W. Loeb and D. J. Mueller, "The Use of a Scale of High Schools in Predicting College Grades," Educational and Psychological Measurement, 30:381-386, Sum., 1970.

[14]Commission on Tests, Report of the Commission on Tests: I. Righting the Balance (New York: College Entrance Examination Board, 1970).

[15]Ibid., p. 18.

[16]B. C. Pedrini and D. T. Pedrini, "Reading Ability and Grades: A Brief Review" (unpublished paper, University of Nebraska at Omaha, 1972).

[17]Ibid.

[18]Ibid.

[19]J. A. Wellington, "Factors Related tc the Academic Success of Resident Freshmen at a Midwestern Liberal Arts College During the Academic Year 1952-53," Dissertation Abstracts, 16:69, no.1, 1956.

[20]J. Seegers and H. Rose, "Verbal Comprehension and Academic Success in College," Personnel and Guidance Journal, 42:295-296, Nov., 1962.

[21]D. Neville, "An Exploratory Study Comparing Successful and Unsuccessful University of Florida Students Classified as Average or Poor Readers," Dissertation Abstracts, 22:3525-3526, April, 1962.

[22]M. A. Lanigan, "The Effectiveness of the Otis, the A.C.E., and the Minnesota Speed of Reading Test for Predicting Success in College," Journal of Educational Research, 41:289-296, Dec., 1947.

[23]C. A. Lindsay and R. Althouse, Comparative Validities of the Strong Vocational Interest Blank Academic Scale and the College Student Questionnaire Motivation for Grades Scale, Student Affairs Research Report, No. 68-2 (University Park: Office of Student Affairs, Pennsylvania State University, June, 1968); see also L. L. Baird and J. M. Richards, Jr., The Effects of Selecting College Students by Various Kinds of High School Achievement, ACT Research Report, No. 23 (Iowa City: American College Testing Program, Feb., 1968); see also R. E. Spencer and W. M. Stallings, "The Student Profile Section of the ACT Related to Academic Success," Journal of College Student Personnel, 9:177-179, May, 1968; see also J. W. Fudge, "Predicting Academic Performance From Biographical Data," Dissertation Abstracts International, 32 (7-A):3785, Jan., 1972; see also G. F. Beanblossom, Biographical Survey, Part III: The Use of Biographical Variables in Predicting Grades in Major Field Criterion Areas for UW Freshmen (Seattle: Bureau of Testing, University of Washington, Sept., 1969); see also H. K. Cameron, "Nonintellectual Correlates of Academic Achievement," The Journal of Negro Education, 37:252-257, Summer, 1968; see also C. E. Lunneborg, "Biographic Variables in Differential vs. Absolute Prediction" (unpublished report, University of Washington, March, 1966); see also L. F. Schoenfeldt, "Nontest Variables in the Prediction of Educational Progress" (paper presented at the Annual Meeting of the American Psychological Association, Sept., 1970, Miami), (U. S. Office of Education, Washington, D.C.: ERIC Clearinghouse on Tests, Measurements, and Evaluation, 1971).

[24]Fudge, loc. cit.

[25]P. W. Lunneborg and C. E. Lunneborg, "The Differential Prediction of College Grades from Biographic Information" (paper read at American Psychological Association, Sept., 1966, New York).

[26]Beanblossom, loc. cit.

[27]Lindsay and Althouse, loc. cit.

[28]Spencer and Stallings, loc. cit.

[29]Commission on Tests, op. cit., p. 18.

[30]M. K. Morgan, "The OPI, the ACT and University attrition: A Discriminant Analysis," Dissertation Abstracts International, 31 (8-A): 3906-3907. Feb., 1971; see also L. S. Flaum, "Point of View: 'Cop Out'--'Push Out'--'Drop Out:' Why?" Innovation and Innovative Programs, No. 10, (University of South Carolina, Jan., 1969), pp. 15-19; see also G. W. Miller, Success, Failure, and Wastage in Higher Education (London: George G. Harrap, 1970).

[31]S. E. Wood, "Relationship of Certain Nonintellective Factors to Persistence" (Washington, D. C.: ERIC Clearinghouse on Junior Colleges, 1968); see also R. E. Krebs and P. G. Liberty, Jr, A Comparative Study of Three Groups of Withdrawal Students on Ten Factor Variables Derived From a 36-Problem Self-Report Inventory (Austin: University of Texas, Feb., 1971); see also R. P. Vaughan, "Involvement in Extracurricular Activities and Dropout," Journal of College Student Personnel, 9:60-61, Jan., 1968.

[32]M. E. Katzell, "Expectations and Dropouts in Schools of Nursing," Journal of Applied Psychology, 52:154-157, April, 1968; see also L. F. Robinson, "Relation of Student Persistence in College to Satisfaction with 'Environmental' Factors," Journal of Educational Research, 63:6-10, Sept., 1969; see also V. Savicki, H. Schumer and R. E. Stanfield, "Student Role Orientations and College Dropouts," Journal of Counseling Psychology, 17:559-566, Nov., 1970; see also R. G. Cope and R. G. Hewitt, "Types of College Dropouts: An Environmental Press Approach," College Student Journal, 5:46-51, Sept.-Oct., 1971.

[33]A. Starr, E. Betz, and J. Menne, "Differences in College Student Satisfaction: Academic Dropouts; Nonacademic Dropouts and Nondropouts," Journal of Counseling Psychology, 19:318-322, July, 1972.

[34]E. Knop, "From a Symbolic-interactionist Perspective: Some Notes on College Dropouts," Journal of Educational Research, 60:450-452, July-Aug., 1967; see also G. R. Hanson and R. G. Taylor, "Interaction of Ability and Personality: Another Look at the Dropout Problem in an Institute of Technology," Journal of Counseling Psychology, 17:540-545, Nov., 1970; see also H. Hendin, "The Psychodynamics of Flunking Out" (paper read at American College Health Association, April, 1972, Atlanta).

[35]D. J. Prediger, "Application of Moderated Scoring Keys to Prediction of Academic Success," American Educational Research Journal, 3:105-111, March, 1966.

[36]Who Clears Probation, Report Series 6, Series, No. 1. (Stevens Point: Office of Institutional Research, Jan., 1972); see also P. W. Hoffman, "A Comparative Study of Student Retention and Attrition at Manchester College," Dissertation Abstracts International, 32 (2-A): 738, Aug., 1971; see also W. C. Blanchfield, "College Dropout Identification: A Case Study," Journal of Experimental Education, 40:1-4, Winter, 1971; see also C. I. Chase, "The College Dropout: His High School Prologue," Bulletin of the National Association of Secondary School Principals, 54:66-71, Jan., 1970.

[37]J. Aiken, "A Comparison of Junior College Withdrawees" (Washington, D. C.: ERIC Clearinghouse on Junior Colleges, 1968); see also W. G. Spady, "Dropouts from Higher Education: Toward an Empirical Model," Interchange, 2:58-62, No. 3, 1971; see also L. Zaccaria and J. Creaser, "Factors Related to Persistence in an Urban Commuter University," Journal of College Student Personnel, 12:286-291, July, 1971.

[38]J. E. Rossman and B. A. Kirk, "Factors Related to Persistence and Withdrawal Among University Students" (paper read at American Educational Research Association, Feb., 1969, Los Angeles); see also D. Trapp, K. Pailthorp, and R. Cope, "Entrance Characteristics and Their Relationship to Types of Student Dropouts," Institutional Research and Institutional Policy Formulation: 11th Annual Forum of the Association for Institutional Research 1971 (Claremont: Office of Institutional Research, Dec., 1971), pp. 119-122; see also A. W. Astin, "Recent Findings from ACE Research Program: Implications for College Choice and Admissions," College and University, 44:341-356, Summer, 1969; see also "Relationship of Academic Predictors to College Success" (Wisconsin State University, Stevens Point, Aug., 1969), (Washington, D. C.: ERIC Clearinghouse on Higher Education, 1969).

[39]V. S. Hardie and S. R. Anderson, Summary of an 'Open' Admission Policy, Personalized Individual Attention, and a Pass-Fail Grading System as Revealed in a Comprehensive Seven-Year Study of 1106 University Freshmen, Research Reports (Washington, D. C.: American Personnel and Guidance Association, 1971), pp. 91-93.

[40]Blanchfield, loc. cit.

[41]Chase, loc. cit.

[42]Trapp, Pailthorp, and Cope, loc. cit.

[43]A. W. Astin, College Dropouts: A National Profile, ACE Research Reports, vol. 7, no.1 (American Council on Education, Feb., 1972).

[44]Aiken, loc. cit.; see also Spady, "Dropouts from Higher Education: Toward an Empirical Model," loc. cit.; see also P. Sensor, "Follow-up of 1965 Freshmen Who Did Not Return for Fall Semester, 1966" (Riverside City College, California, May, 1967), (Washington, D. C.: ERIC Clearinghouse on Junior Colleges, 1967); see also R. J. Morrisey, "Attrition in Probationary Freshmen," Journal of College Student Personnel, 12:279-285, July, 1971; see also D. L. Kester, "Further Validation of the

Nor Cal Questionnaire: Secondary Validation" (U. S. Office of Education, Washington, D. C.: ERIC Clearinghouse on Junior Colleges, Jan., 1972).

[45]R. E. Iffert and B. S. Clarke, College Applicants, Entrants, Dropouts, Bulletin 1965, No. 29 (Washington, D. C.: Bureau of Educational Research and Development, U. S. Office of Education, 1965).

[46]J. D. Conner, "The Relationship Between College Environmental Press and Freshman Attrition at Southern Methodist University," College and University, 43:265-273, Spring, 1968.

[47]B. B. Baber, Jr. and R. B. Caple, "Educational Opportunity Grant Students: Persisters and Nonpersisters," Journal of College Student Personnel, 11:115-119, March, 1970.

[48]R. J. Cope, "Limitations of Attrition Rates and Causes Given for Dropping Out of College," Journal of College Student Personnel, 9: 386-392, Nov., 1968.

[49]W. G. Spady, "Peer Integration and Academic Success: Toward a Sociological Model of Undergraduate Attrition" (paper read at the American Educational Research Association, Feb., 1968, Chicago); see also S. Ikenberry, "Factors in College Persistence," Journal of Counseling Psychology, 8:322-329, Winter, 1961; see also R. E. Iffert, Retention and Withdrawal of College Students (Washington, D. C.: U.S. Office of Education, Government Printing Office, 1958).

[50]R. P. Vaughan, "College Dropouts: Dismissed vs. Withdrew," Personnel and Guidance Journal, 46:685-689, March, 1968.

[51]Zaccaria and Creaser, loc. cit.

[52]Hoffman, loc. cit.

[53]W. Hannah, "Personality Differentials Between Lower Division Dropouts and Stay-ins," Journal of College Student Personnel, 12:16-19, Jan., 1971; see also C. I. Chase, The University Freshman Dropout, Indiana Studies Prediction, No. 6 (Indiana University, Bureau of Educational Studies and Testing, 1965); see also R. G. Cope, "College Press and Dropouts" (paper read at American Educational Research Association, Feb., 1969, Los Angeles), see also B. M. Gadzella and G. Bentall, "Differences in High School Academic Achievements and Mental Abilities of College Graduates and College Dropouts," College and University, 42:351-356, Spring, 1967; see also K. B. Daniel, "A Study of College Dropouts With Respect to Academic and Personality Variables," Journal of Educational Research, 60:230-235, Jan., 1967; see also H. A. Rose and C. F. Elton, "Attrition and the Vocationally Undecided Student," Journal of Vocational Behavior, 1:99-103, Jan., 1971.

[54]Aiken, loc. cit.; see also Spady, loc. cit.; see also Kester, loc. cit.; see also Morrisey, loc. cit.; see also Sensor, loc. cit.

[55]See previous section of this article.

[56]M. Morgan, op. cit., p. 3906-A

[57]W. Ihlanfeldt, "Subtleties in College Selection," Journal of the National Association of College Admissions Counselors, 15:3-4, May, 1970; see also D. A. Dudley, "College Entrance Tests and the Disadvantaged Student," National ACAC Journal, 13:13-15, Feb., 1969; see also R. W. Pitcher, Challenges to Common Concepts of Potential (Berea: Educational Development Center Institute on Underachievement, 1969); see also A. W. Astin, "Racial Considerations in Admissions," The Campus and the Racial Crisis: Background Papers for Participants in the 1969 Annual Meeting of the American Council on Education (Washington: The Council, 1969), pp. 65-93; see also R. Nunez, "Recruitment and Admission of Minority Students: The Glaring Reality," The Minority Student on Campus: Expectations and Possibilities, eds. R. A. Altman and P. O. Snyder (Boulder: Western Interstate Commission for Higher Education, 1971), pp. 127-140.

[58]Miller, loc. cit.

[59]H. P. Brandson, "Financing Higher Education for Poor People: Fact and Fiction," College Board Review, 77:5-9, Fall, 1970; see also F. E. Crossland, Minority Access to College, A Ford Foundation Report (New York: Schocken, 1971); see also B. C. Pedrini and D. T. Pedrini, "Intelligent Intelligence Testing" (University of Nebraska at Omaha, 1972), (Washington, D. C.: ERIC Clearinghouse on Tests, Measurement, and Evaluation, 1973); see also "Academically Disadvantaged Minority Group Students in Public Two Year Colleges" (Pennsylvania State Department of Education, Harrisburg, Bureau of Curriculum Development and Education, Oct., 1971), (Washington, D. C.: ERIC Clearinghouse on Junior Colleges, April, 1972).

[60]L. L. Baird, Family Income and the Characteristics of College Bound Students, ACT Research Reports, No. 17 (Iowa City: American College Testing Program, Feb., 1967); see also P. Gurin and E. Epps, "Some Characteristics of Students from Poverty Backgrounds Attending Predominantly Negro Colleges in the Deep South," Social Forces, 66:27-40, Sept., 1966.

[61]W. H. Sewell and V. P. Shah, "Socioeconomic Status, Intelligence, and the Attainment of Higher Education," Sociology of Education, 40:1-23, Winter, 1967; see also J. W. Trent, "A New Look at Recruitment Policies," College Board Review, 58:7-11, Winter, 1965-66; see also C. Nam, "Group Disparities in Educational Participation and Achievement, IV. Conference on Policies for Educational Growth" (Paris, France, June 3-5, 1970), (Washington, D. C.: ERIC Clearinghouse on Educational Administration, 1971).

[62]Baird, loc. cit.; see also Dudley, loc. cit.; see also R. R. DeBlassie and K. Boswell, "The Culturally Disadvantaged College Student," Journal of the National Association of Women Deans and Counselors, 35: 126-132, Spring, 1972; see also L. L. Rhodes and R. B. Caple, "Academic Aptitude and Achievement of Educational Opportunity Grant Students," Journal of College Student Personnel, 11:387-390, Nov., 1969.

[63]L. H. Worthington and C. W. Grant, "Factors of Academic Success: A Multivariate Analysis " Journal of Educational Research, 65:7-10, Sept., 1971; see also W. Moon, The Auburn Student: A Demographic Study of the Freshmen Class of Auburn University, 1964-65 (Auburn: Student Counseling Service, Auburn University, 1966); see also A. Dispenzieri, S. Giniger, W. Reichman, and M. Levy, "College Performance of Disadvantaged Students as a Function of Ability and Personality," Journal of Counseling Psychology, 18:298-305, July 1971.

[64]Sewell and Shah, loc. cit.; see also D. E. Fox, "Presentation of Attrition Study," The Liberal Arts College's Responsibility for the Individual Student, ed. E. J. McGrath (New York: Columbia University Teachers College Press, 1966), pp. 86-120.

[65]Miller, loc. cit.

[66]H. W. Lane, "Admissions Procedures in Transition: Some Interrelations," IRCD Bulletin, 5:3, Winter, 1969.

[67]Trent, loc. cit.

[68]Sewell and Shah, loc. cit.

[69]Nam, loc. cit.

[70]M. D. Orwig, Toward More Equitable Distribution of College Student Aid Funds: Problems in Assessing Student Financial Need, ACT Research Report, No. 43 (Iowa City: American College Testing Program, 1971).

[71]R. Merritt, "Academic Performance of Work-Study Students," Journal of College Student Personnel, 11:173-176, May, 1970.

[72]Baird, loc. cit.

[73]Rhodes and Caple, loc. cit.

[74]DeBlassie and Boswell, loc. cit.

[75]E. D. West, Financial Aid to the Undergraduate (Washington, D. C.: American Council on Education, 1963).

[76]K. D. Binford, "An Analysis of the Effect of Intelligence on the Relationship Between Socio-economic Status and Academic Achievement," Sociological Focus, 4 (4): 27-37, Summer, 1971.

[77]Moon, loc. cit.

[78]Worthington and Grant, loc. cit.

[79]J. W. Butzow and C. M. Williams, "College Freshman Achievement of Parochial and Public Secondary School Graduates," Journal of Educational Research, 60:215-217, Jan., 1967.

[80]Miller, op, cit., p. 37.

[81]Trapp, Pailthorp, and Cope, loc. cit.; see also Spady, loc. cit.; see also Sewell and Shah; see also E. L. Wegner and W. H. Sewell, "The Relation of Type of College Attended to Graduation" (paper read at American Sociological Association, August, 1968, Boston); see also D. H. Kamens, "Social Class, College Contexts, and Educational Attainment: Social Class and College Dropout" (paper read at American Sociological Association, August, 1968, Boston); see also R. J. Panos and A. W. Astin, "Attrition Among College Students" (paper read at American Educational Research Association, Feb., 1967, New York).

[82]A. H. Sewell, "Inequality of Opportunity for Higher Education," American Sociological Review, 36:793-809, Oct., 1971.

[83]The Social and Economic Status of Negroes in the United States, 1969 (Washington, D. C.: BLS Report No. 375; Current Population Reports, Series P-23, No. 29).

[84]Ibid., p. 16.

[85]E. W. Haven and D. H. Horch, "How College Students Finance Their Education," Financial Aid News, No. 8 (New York: College Scholarship Service/College Entrance Examination Board, 1972), p.8.

[86]Brandson, loc. cit.

[87]S. A. Kendrick, "Minority Students on Campus," The Minority Student on Campus: Expectations and Possibilities, eds. R. A. Altman and P. O. Snyder (Boulder: Western Interstate Commission for Higher Education, 1971), pp. 43-50.

[88]E. H. Epstein, "Social Class, Ethnicity and Academic Achievement: A Cross-cultural Approach," Journal of Negro Education, 41 (3):202-215, Summer, 1972.

[89]Ibid,; see also R. L. Flaugher and D. A. Rock, "Patterns of Ability Factors Among Four Ethnic Groups," Proceedings of the Annual Convention of the American Psychological Association, Vol. 7 (pt.1), (Princeton: Educational Testing Service, 1972), pp. 27-28; see also R. L. Flaugher, Patterns of Test Performance by High School Students of Four Ethnic Identities, Project Access Research Report No. 2 (Princeton: Educational Testing Service, 1971); see also A. M. Bindman, "Pre-College Preparation of Negro College Students," Journal of Negro Education, 35:313-321, Fall, 1966; see also M. E. Backman, "Patterns of Mental Abilities: Ethnic, Socioeconomic, and Sex Differences," American Educational Research Journal, 9 (1): 1-12, Winter, 1972; see also E. E. Werner, K. Simonian, and R. S. Smith, "Ethnic and Socioeconomic Status Differences Among Preschool and School-Age Children in Hawaii," Journal

of Social Psychology, 75:43-59,1968; see also G. S. Lesser, G. Fifer, and D. H. Clark,"Mental Abilities of Children from Different Social Class and Cultural Group," Monographs of the Society for Research in Child Development, 30 (4), 1965; see also M. Whiteman and M. Deutsch,'Social Disadvantage as Related to Intellective and Language Development," Social Class, Race, and Psychological Development, eds. M. Deutsch, M. Katz, and A. Jensen (New York: Holt, Rinehart, & Winston, 1968), pp. 86-114.

[90]E. W. Gordon, "Access to Higher Education," IRCD Bulletin, 8:7-10, Feb., 1972.

[91]Crossland, op. cit., p. 13.

[92]Ibid, p. 15.

[93]Ibid, p. 13.

[94]Ibid., p. 15.

[95]Astin, "Racial Considerations in Admissions," loc. cit.; see also Nunez, loc. cit.; see also Crossland, loc. cit.; see also M. J. Archie, "Observations on Minority Group Education," Journal of the Association of College Admissions Counselors, 13: 23-25, June, 1968.

[96]L. Berger, "White Coat Versus Cap and Gown" (paper read at American Orthopsychiatric Association, April, 1969, New York).

[97]See previous section in this paper on "Prediction of Achievement."

[98]Dudley, loc. cit.; see also D. A. Goslin, "What's Wrong with Tests and Testing--Part 1," College Board Review, 65:12-18,Fall, 1967.

[99]J. H. Borup, "The Validity of the American College Test for Discerning Potential Academic Achievement Levels: Ethnic and Sex Groups," Journal of Educational Research, 65:3-6, Sept., 1971; see also R. L. Flaugher, Minority Versus Majority Group Performance on an Aptitude Test Battery, Project Access Research Report, No. 3 (Princeton: Educational Testing Service, Aug., 1971).

[100]Gordon, loc. cit.

[101]J. W. Hall, "The Effects of Supportive Services for Disadvantaged College Students," Dissertation Abstracts International, 32 (7-A): 3686-3687, Jan., 1972.

[102]D. R. Green, "Racial and Ethnic Bias in Test Construction. Final Report" (Monterey: CTB/McGraw Hill, Sept., 1971), (Washington, D. C.: ERIC Clearinghouse on Tests Measurements and Evaluation, Feb., 1972).

[103]Crossland, op. cit., p. 58.

[104]F. Bowles and F. A. DeCosta, Between Two Worlds (New York: McGraw Hill, 1971).

[105]A. J. Jaffe, W. Adams, and S. Meyers, Negro Higher Education in the 1960's (New York: Praeger, 1968); see also S. A. Kendrick and C. L. Thomas, "Transition from School to College, Review of Educational Research," 40:151-179, Feb., 1970; see also K. M. Wilson, Black Students Entering CRC Colleges: Their Characteristics and Their First-Year Academic Performance, Research Memorandum No. 69-1 (Vassar College: College Research Center, April, 1969).

[106]R. E. Pandey, "The SCAT and Race," Psychological Reports, 28 (2): 459-462, April, 1971.

[107]S. A. Kendrick, "The Coming Segregation of Our Selective Colleges," College Board Review, 66:6-13, Winter, 1967-68.

[108]J. C. Stanley and A. C. Porter, "Correlation of Scholastic Aptitude Test Scores with College Grades for Negroes Versus Whites," Journal of Educational Measurement, 4:199-217, Winter, 1967.

[109]S. C. Davis, J. W. Loeb, and L. F. Robinson, "A Comparison of Characterisitis of Negro and White College Freshman Classmates," Journal of Negro Education, 39:359-366, Fall, 1970; D. D. Sampel and W. R. Seymour, "The Academic Success of Black Students: A Dilemma," Journal of College Student Personnel, 12:243-247, July, 1971; J. C. Stanley, "Predicting College Success of the Educationally Disadvantaged," Science, v.171,(3972):640-647, Feb., 1971.

[110]R. L. Flaugher, "Testing Practices, Minority Groups, and Higher Education: A Review and Discussion of the Research" (Princeton: Educational Testing Service), (Washington, D. C.: ERIC Clearinghouse on Tests, Measurements, and Evaluation, June, 1970).

[111]Bowles and DeCosta, loc. cit.; see also Nunez, loc. cit.

[112]Bowles and DeCosta, loc. cit.; see also J. A. Davis and S. E. Kerner, The Validity of Tests and Achievement in High School for Predicting Initial Performance in the Public Universities of North Carolina with Special Attention to Black Students, Report No. PR-71-3 (Princeton: Educational Testing Service, March, 1971); see also R. T. Harnett, "Differences in Selected Attitudes and College Orientations Between Black Students Attending Traditionally Negro and Traditionally White Institutions," Sociology of Education, 43 (4):419-436, Fall, 1970; H. W. Lane, "Where Do Black Students Go to College and Why?" National ACAC Journal, 16:22-24, Sept., 1971.

[113]J. C. Stanley, "Relative Predictability of Freshman Grade-Point Average from SAT Scores in Negro and White Southern Colleges" (Madison: Laboratory of Experimental Design, 1966, Mimeographed).

[114]S. P. Roberts, Studies in Identification of College Potential (Nashville: Fisk University, 1962).

[115]Astin, "Racial Considerations in Admissions," loc. cit.

[116]G. Temp, "Validity of the SAT for Blacks and Whites in Thirteen Integrated Institutions," Journal of Educational Measurement, 8:245-257, Winter, 1971.

[117]C. Pfeifer, M. Michael, and W. E. Sedlacek, "The Validity of Academic Predictors for Black and White Students at a Predominantly White University," Journal of Educational Measurement, v. 8(4):253-261, Winter, 1971; see also A. Kallingal, "The Prediction of Grades for Black and White Students at Michigan State University," Journal of Educational Measurements, 8:263-265, Winter, 1971; see also J. Harris and J. Reitzel, "Negro Freshmen Performance in a Predominantly Non-Negro University," Journal of College Student Personnel, 8:366-368, Nov., 1967; see also J. L. Horowitz, W. E. Sedlacek, and G. C. Brooks, Jr., Correlates of Black and White University Student Grades Beyond the Freshman Year, Research Report No. 7-72 (University of Maryland: Cultural Study Center, 1972); see also J. C. Stanley, A. B. Biaggio, and A. C. Porter, "Relative Predictability of Freshmen Grade Point Averages from SAT Scores in Negro and White Southern Colleges" (paper read at American Research Association and the National Council on Measurement in Education, Feb., 1966, Chicago).

[118]J. A. Davis and G. Temp, "Is the SAT Biased Against Black Students?" College Board Review, 81:4-9, Fall, 1971.

[119]K. B. Clark and L. Plotkin, The Negro Student at Integrated Colleges (New York: National Scholarship and Fund for Negro Students, 1963).

[120]H. Borgen, "Differential Expectations? Predicting Grades for Black Students in Five Types of Colleges," Measurement and Evaluation in Guidance, 4 (4):206-212, January, 1972.

[121]A. J. Jaffe and W. Adams, "Trends in College Enrollment," College Board Review, No. 55:27ff, Win., 1964-64, cited by A. J. Jaffe, W. Adams, and S. Meyers, Negro Higher Education in the 60's (New York: Praeger, 1968), p. 74.

[122]J. Egerton, "The White Sea of Higher Education," The Minority Student on the Campus: Expectations and Possibilities, eds., R. A. Altman and P. O. Snyder (Boulder: Western Interstate Commission for Higher Education, 1971), pp. 35-41.

[123]Astin, College Dropouts: A National Profile, loc. cit.

[124]Clark and Plotkin, loc. cit.

[125]Davis, Loeb, and Robinson, loc. cit.

[126]Astin, "Racial Considerations in Admissions," loc. cit.

[127]Bowles and DeCosta, op. cit., p. 185.

[128]Jaffe, Adams, and Myers, op. cit., p. 252.

[129]Ibid.

[230]D. J. Watley, Black and Nonblack Youth: Characteristics and College Attendance Patterns, NMSC Research Reports, Vol. 7, No. 4, (National Merit Scholarship Corporation, 1971).

[131]Harris and Reitzel, loc. cit., see also Pfeifer, Michael, and Sedlacek, loc., cit.; see also Kallingal, loc. cit.; see also L. Munday, "Predicting College Grades Using ACT Data," Educational and Psychological Measurement, 27:401-406, Summer, 1967; see also W. E. Coffman, "Developing Tests for the Culturally Different," School and Society, 93:430-433, Nov., 1965; see also O. W. Hascall, "Predictability of College Grades: Differences Between Two Apparently Like Colleges" (paper read at Association of Institutional Research, May, 1967, Athens, Georgia).

[132]L. E. Tyler, The Psychology of Human Differences (2nd ed., New York: Appleton Century Croft, 1956), cited by D. Wechsler, The Measurement and Appraisal of Adult Intelligence (4th ed., Baltimore: Williams and Wilkins, 1958).

[133]D. Wechsler, Ibid., p. 148.

[134]B. N. Adams and M. T. Meidam, "Economics, Family Structure, and College Attendance," American Journal of Sociology, 74:230-239, Nov., 1968.

[135]K. E. Young, Access to Higher Education (American Association of State Colleges and Universities, April, 1971).

[136]E. Walster, T. A. Cleary, and M. M. Clifford, "Research Note: The Effect of Race and Sex on College Admission," Sociology of Education, 44:237-244, Spring, 1970.

[137]Ibid.

[138]D. Spiegel and P.Keith-Spiegel, "Multiple Predictors of Course Grades for College Men and Women," Journal of College Student Personnel, 12 (1):44-48, Jan., 1971; see also R. P. Lowman and D. W. Spuck, "Variables Related to College Success for the High-Risk Student" (paper read at Western Psychological Association, April, 1971, San Francisco).

[139]Borup, loc. cit.

[140]J. M. Foster and D. D. Jenkins, KSU Freshmen, 1960-1964 Potential Ability (ACT) and Obtained Grades, Studies in Student Personnel Work Research Reports, No. 30 (Kansas State University, Student Counseling Center, Dec., 1965).

[141] J. D. Boyd, "The Relative Prognostic Value of Selected Criteria in Predicting Academic Success at Northwestern University," Dissertation Abstracts, 15:1780, Dec. 1955.

[142] E. W. Irvine, "Estimated Grades and Freshmen Achievement," Vocational Guidance Quarterly, 13:193-195, March, 1965.

[143] Lindsay and Althouse, loc. cit.

[144] W. B. Michael, R. A. Jones, A. Coe, A. Gershon, M. Hoover, K. Katz, and D. Smith, "High School Record and College Board Scores as Predictors of Success in a Liberal Arts Program During the Freshman Year of College," Educational and Psychological Measurement, 22:399-400, Feb., 1962.

[145] J. C. Stanley, "Further Evidence Via the Analysis of Variance that Women are More Predictable Academically than Men," Ontario Journal of Educational Research, 10:49-56, Jan., 1967.

[146] L. Flora, "Predicting Academic Success at Lynchburg College from Multiple Correlation Analyses of Four Selected Predictor Variables," Dissertation Abstracts, 27:2276, 8-A, 1967.

[147] M. Siegelman, "SAT and High School Average Predictions of Four Year College Achievement," Educational and Psychological Measurement, 31 (4):947-950, Winter, 1971.

[148] J. Bowers, "Factor Structures and Predictive Validities of College Ability Tests for Regularly Admitted and Disadvantaged Beginning Freshmen at the University of Illinois" (paper read at American Educational Research Association, March, 1970, Minneapolis).

[149] T. D. F. Langen, "Sex Status and the Prediction of Academic Performance" (unpublished report, University of Washington, 1966), (College Student Personnel Abstracts, 2:280, Spring, 1967).

[150] Buszek, B. R., "Differential Treatment of Test Scores," College and University, 43:294-307, Spring, 1968.

[151] A. M. Cherdack, "The Predictive Validity of the Scholastic Aptitude Test for Disadvantaged College Students Enrolled in a Special Education Program, Final Report." (Office of Education, Washington, D. C., Bureau of Research),(Washington, D. C.: ERIC Clearinghouse on Higher Education, Oct., 1971).

[152] Foster and Jenkins, loc. cit.; see also A. R. Baron, "Non-intellective Variables Related to Successful and Unsuccessful Students in a Junior College" (unpublished report,1968),(College Student Personnel Abstracts, 5:1-2, Fall, 1969); see also D. J. Veldman, "Effects of Sex, Aptitude and Attitudes on the Academic Achievement of College Freshmen," Journal of Educational Measurement, 5:245-249, Fall, 1968.

[153]A. Astin, College Dropouts: A National Profile, loc. cit.; see D. W. Irvine, "Graduation and Withdrawal: An Eight Year Follow-up," College and University, 41:32-40, Fall, 1965.

[154]A. H. Hill, "A Longitudinal Study of Attrition Among High Aptitude College Students," Journal of Educational Research, 60:166-173, Dec., 1966.

[155]R. G. Cope, "Sex Related Factors and Attrition Among College Women," Journal of the National Association of Women Deans and Counselors, 33:118-124, Spring, 1970.

[156]A. Astin, "Recent Findings from the ACE Research Program: Implications for College Choice and Admissions," loc. cit.; see also A. Astin, College Dropouts: A National Profile, loc. cit.; see also H. E. Yuker, P. Lichtenstein, and P. Witheiler, Who Leaves Hofstra for What Reason, Research Report No. 102 (Hofstra University: Center for the Study of Higher Education, May, 1972).

[157]L. A. D'Amico, "Changes in Number of Married Students in Indiana Institutions: 1956-57 to 1965-66," College and University, 43:178-184, Winter, 1968; see also C. Clarke, Marriage and College Life, Marriage and College Life Project (Department of Student Health, University of Florida, May, 1969).

[158]Iffert and Clarke, loc. cit.; see also D. J. Watley, Black and Non-Black Youth: Does Marriage Hinder College Attendance? NMSC Research Reports, v. 7 No. 5 (National Merit Scholarship Corporation, 1971); see also D. J. Watley, Career or Marriage?: A Longitudinal Study of Able Young Women, NMSC Research Reports, v. 5, No. 7 (National Merit Scholarship Corporation, 1969); see also H. B. Schleman, "Educational Planning for Wives of Men Students," Journal of the National Association of Women Deans and Counselors, 33:23-26, Fall, 1969; see also A. E. Bayer, The Black College Freshman: Characteristics and Recent Trends, ACE Research Reports v. 7, No. 3 (American Council on Education, October, 1972).

[159]Watley, Black and Non-Black Youth: Does Marriage Hinder College Attendance? loc. cit.; see also R. B. Klein and F. A. Snyder, "Non-Academic Characteristics and Academic Achievement," Journal of College Student Personnel, 10:328-332, Sept., 1969; see also J. R. Eshleman and C. L. Hunt, "Social Class Influences on Family Adjustment Patterns of Married College Students" (paper read at American Sociological Association, August, 1966, Miami Beach).

[160]Watley, Career or Marriage?: A Longitudinal Study of Able Young Women, loc. cit.; see also Aiken, loc. cit.; see also D. W. Irvine, "University Dropouts in Good Standing," Journal of the Association of College Admissions Counselors, 12 (1):13-17, 1967; see also A. A. Dole, "Iffert Revisited: Persisters and Defaulters," Journal of College Student Personnel, 10:185-192, May, 1969; see also V. Hildebrand, "Academic Orientation of College Students' Wives," Personnel and Guidance Journal, 45:597-599, Feb., 1967.

[161]Iffert and Clarke, loc. cit.

[162]Watley, Black and Non-Black Youth: Does Marriage Hinder College Attendance? loc. cit.

[163]Bayer, loc. cit.

[164]Schleman, loc. cit.

[165]Watley, Career or Marriage?: A Longitudinal Study of Able Young Women, loc. cit.

[166]Eshleman and Hunt, loc. cit.

[167]Klein and Snyder, loc. cit.

[168]Watley, Black and Non-Black Youth: Does Marriage Hinder College Attendance? loc. cit.

[169]Eshleman and Hunt, loc. cit.; see also Clarke, loc. cit., see also W. R. Mason, Jr., "Problems of Married College Students: Health Education Implications," Journal of the American College Health Association, 14:270-276, April, 1966.

[170]Eshleman and Hunt, ibid.; see also W. R. Mason, ibid.; see also W. H. Sharp and H. A. Marra, "Factors related to Classification of Client Problems, Number of Counseling Sessions, and Trends of Client Problems," Journal of Counseling Psychology, 18:117-122, March, 1971.

[171]Irvine, "University Dropouts in Good Standing," loc. cit.; see also Hildebrand, loc. cit.

[172]Dole, loc. cit.; see also Watley, Career or Marriage?: A Longitudinal Study of Able Young Women, loc. cit.; see also Aiken, loc. cit.

[173]Crossland, loc. cit.; see also R. Ferrin, "Barrier to Universal Higher Education" (Palo Alto, California: College Entrance Examination Board),(Washington, D. C.: ERIC Clearinghouse on Higher Education, March, 1970).

[174]Iffert and Clark, loc. cit.

[175]Fox, loc. cit.

[176]G. D. Demos, "Analysis of College Dropouts--Some Manifest and Covert Reasons" (paper read at American Personnel and Guidance Association March, 1967, Dallas).

[177]D. L. Kester, "California Community Stopouts: A Comparison of Three Nor Cal-CCHE Follow-Up Studies" (U.S. Office of Education, DHEW, Division of Academic Facilities, Dec., 1971),(Washington, D. C.: ERIC Clearinghouse on Junior Colleges, April, 1972).

[178]Yuker, Lichtenstein, and Witheiler, loc. cit.

[179]R. E. Iffert, Retention and Withdrawal of College Students, Bulletin 1958, No. 6, (Washington: DHEW, Government Printing Office, 1957),(Washington, D. C.: ERIC Clearinghouse on Higher Education, Feb., 1972).

[180]J. Summerskill, "Dropouts from College," The American College. ed. N. Sanford (New York: Wiley, 1962).

[181]Orwig, loc. cit.

[182]L. Gladieux and L. D. Rice, "Report from the Washington Office," Financial Aid News, Vol. 2, No. 4 (New York: College Scholarship Service/ College Entrance Examination Board, March, 1973), p. 5; see also R. G. Moon, Jr., "Student Aid in a Decade of Decision," College Student Personnel Work in the Years Ahead, ed. G. J. Klopf (Washington: American Personnel and Guidance Association, 1966), pp. 60-68.

[183]R. G. Kinney, "The Effect of Scholarship Aid Upon the Academic Achievement and Persistence of Washington State University Undergraduates," Dissertation Abstracts International, 31 (8-A):3903-A, Feb., 1971.

[184]Rhodes and Caple, loc. cit.

[185]H. S. Astin, et al., Higher Education and the Disadvantaged Student (Washington, D. C.: Human Service Press, 1972).

[186]Yuker, Lichtenstein, and Witheiler, loc. cit.

[187]J. F. Carmody, R. H. Fenske, and C. S. Scott, Changes in Goals, Plans, and Background Characteristics of College-Bound High School Students, ACT Research Report, No. 52 (Iowa City: American College Testing Program, August, 1972); see also Regents' Commission on the Urban University in the 70's. Report of the Regents' Commission on the Urban University in the 70's (Omaha: University of Nebraska Board of Regents, Sept. 30, 1970), p.4.

[188]Baird, loc. cit.; see also E. Carpenter, "A Study of Needs and Activities of Financial Aid Recipients and Non-Recipients," Journal of Student Financial Aid, 1:8-17, Nov., 1971; see also G. A. Schlekat, "Financial Aid Decisions and the Socioeconomic Class of Applicants," Journal of College Student Personnel, 9:146-149, May, 1968.

[189]"California Student Resource Survey," Financial Aid News, Vol. 2, No.4 (New York: College Scholarship Service/College Entrance Examination Board, March, 1973), pp. 2-3; see also "How Part-Time Work Affects Academic Performance," Journal of College Placement, 29:104, April-May, 1969.

[190]G. F. Hamerlik and J. E. Brown, "A Comparison of Working and Non-Working Freshmen's First Semester Grade Point Average at the University of North Dakota," College of Education Record of the University of North Dakota, 55:10-11, Oct., 1969.

[191]J. E. Hay and C. A. Lindsay, "The Working Student: How Does He Achieve?" Journal of College Student Personnel, 10:109-114, March, 1969.

[192]J. B. Henry, "Part-Time Employment and Academic Performance of Freshmen," Journal of College Student Personnel, 8:257-260, July, 1967.

[193]Baron, loc. cit.

[194]"How Part-Time Work Affects Academic Performance," loc. cit.

[195]Hay and Lindsay, loc. cit.

[196]J. D. Augsberger, An Analysis of Academic Performance of Working and Non-Working Students on Academic Probation at Northern Illinois University (University of Missouri, 1971).

[197]J. E. Hay, K. Evans, and C. A. Lindsay, "Student Part-Time Jobs: Relevant or Non-Relevant," Vocational Guidance Quarterly, 19: 113-118, Dec., 1970.

[198]H. E. Babbush and M. V. Neal, "The College Work-Study Program," Journal of College Placement, 28:103-107, April-May, 1968.

[199]W. B. LeGrand, F. Piercy, and O. Panos, The Effects of Holding a Work-Study Job on the Academic Achievement of First Semester Freshmen at the University of South Carolina, Research Notes No. 9 (Division of Student Affairs, University of South Carolina, May, 1970).

[200]B. B. Kelly, "An Analysis of Various Types of Financial Aid and Academic Achievement at the University of Illinois," Dissertation Abstracts International, 31 (9-A):4550-A, March, 1971.

[201]E.L. Klingelhofer, "Do Race and Economics Decide Who Gets What?" Journal of Student Financial Aid, 1:34-35, May, 1971; see also S. Jacobson, "Financial Aid for College Students," Student Personnel Services for Adults in Higher Education, ed., M. L. Farmer (Metuchen, N. J.: Scarecrow Press, 1967), pp. 136-148; see also Financial Aid Handbook for Counselors in Nebraska Schools, (2nd edition. Nebraska Association of Student Financial Aid Administrators).

[202]H. E. Kaiser and G. Bergen, "Shall College Freshmen Work?" Journal of College Student Personnel, 9:384-385, Nov., 1968.

[203]Pedrini and Pedrini, "Reading Ability and Grades: A Brief Review," loc. cit.

[204]K. B. Clark, M. Deutsch, A. Gartner, F. Keppel, H. Lewis, T. Pettigrew, L. Plotkin, and F. Riessman, The Educationally Deprived (New York: Metropolitan Applied Research Center, 1972); see also "Academically Disadvantaged Minority Group Students in Public Two Year Colleges" (Harrisburg: Pennsylvania State Department of Education, Bureau of Curriculum Development and Education, Oct., 1971), (Washington, D. C.: ERIC Clearinghouse on Junior Colleges, April, 1972).

[205]Crossland, loc. cit.; see also W. E. Sedlacek, J. B. Brooks, Jr. and L. A. Mindus, Black and Other Minority Admissions to Large Universities: Three Year National Trends, Research Report No. 3-72 (University of Maryland, Cultural Study Center, 1972).

[206]W. E. Sedlacek and G. C. Brooks, "Black Freshmen in Large Colleges: A Survey," Personnel and Guidance Journal, 49:307-312, Dec., 1970; see also W. W. Willingham, Admission of Minority Students in Midwestern Colleges (New York: Midwest Committee for Higher Education Survey, College Entrance Examination Board, May, 1970).

[207]F. F. Harcleroad, "Disadvantaged Students: What Makes for College Survival" (paper read at American Association for Higher Education, March, 1971, Chicago).

[208]Ibid.

[209]V. Bahe, "Reading Instruction and College Achievement," Reading Improvement, 6:57-61, 77, Winter, 1969; see also J. W. Brown, M. Watson, and R. Bowden, "Building Basic Skills at the Community Level: A New Approach," Journal of the Reading Specialist, 9:144-150, 158, May 1970.

[210]W. Thompson, "Experiment in Remedial Reading," School and Society, 34:156-158, Feb., 1931.

[211]G. Regensburg, "Relationship Between Participation in a Reading Improvement Course and Grade Point Averages of College Freshmen," Dissertation Abstracts, 27:1559A, Dec., 1966; see also "The Relationship Between College Reading Laboratory Experience and Gain in College Grade Point Average," Journal of the Reading Specialist, 7:50-54, Dec., 1967.

[212]R. Kilby, "Relation of a Remedial Reading Program to Scholastic Success in College," Journal of Educational Psychology, 36:513-534, Dec., 1945.

[213]S. Ikenberry, "Effects of Reading, Study Skills Improvement, and Reduced Credit Load on Achievement and Persistence of Failure Prone College Freshmen: A Pilot Study" (Office of Education, Washington D. C., Bureau of Research, Nov., 1966),(Washington, D. C.: ERIC Clearinghouse on Reading, Feb., 1969).

[214]Pedrini and Pedrini, "Reading Ability and Grades: A Brief Review," loc. cit.

[215]F. S. Foreman, "Study of Self-Reinforcement and Study Skills Program with Bright College Underachievers," Dissertation Abstracts, 30: 1430A, Oct., 1969; see also R. L. Dubois, "Improvement of Textbook Comprehension in College Reading Classes," Journal of Reading, 13:113-118, 165-166, Nov., 1969; see also W. C. Hampton, "Multi-Level and Mono-Level Approaches to Study Skills with College Freshmen," Dissertation Abstracts, 30:1361, Oct., 1969.

[216]L. J. Yuthas, "A Study of Two Approaches to the Teaching of Remedial Reading to Low Achievers at an Urban College," Dissertation Abstracts, 30:2272A, Dec., 1969; see also Pedrini and Pedrini, "Reading Ability and Grades: A Brief Review," loc. cit. for a more extensive discussion of college reading programs.

[217]J. Egerton, "At San Mateo, Readiness Instead of Remedies," Southern Education Report, 4:20-23, Nov., 1968; see also M. Harshbarger, "A University Reading and Study Skills Program for High-Risk Students" (paper presented at the Annual Meeting of International Reading Association, May, 1972, Detroit); B. Somerville, "Can Selective Colleges Accommodate the Disadvantaged? Berkeley Says 'Yes'," College Board Review, 65:5-10, Fall, 1967; R. K. Kelly, "An Experimental Work-Study Program for Disadvantaged Youth," Educational Record, 49:214-220, Spring, 1968; see also F. L. Denmark, E. J. Shirk, and V. U. Hirsch, "Determinants of Success in a College Preparatory Program for Disadvantaged High School Graduates" (paper read at Eastern Psychological Association, April, 1968, Washington); see also C. J. Jensema and C. E. Lunneborg, A Preliminary Investigation of a Special Education Program for Minority Group University Students (University of Washington, Bureau of Testing, June, 1970).

[218]O. R. Hendrix, "The Effect of Special Advising on Achievement of Freshmen With Low Predicted Grades," Personnel and Guidance Journal, 44:185-188, Oct., 1965; see also D. R. Raymer, "A Study of Compensatory Education for 'High-Risk' College Students," Dissertation Abstracts International, 31 (7-A):3377, Jan., 1971; see also B. Somerville, "Minorities and Higher Education" (paper read at Western College Association, March, 1967, San Diego); see also G. L. Heath, "An Inquiry into a University's 'Noble Savage' Program," Integrated Education, 8:4-9, July-August, 1970; see also O. A. Heinkel, "Evaluation of a General Studies Program for the Potentially Low Academic Achiever in California Junior Colleges. Final Report" (Office of Education, Washington, D. C., Bureau of Research, April, 1970),(Washington, D. C.: ERIC Clearinghouse on Junior Colleges, 1970); see also W. F. Brown, N. O. Wehe, V. G. Zunker, and W. L. Haslam, "Effectiveness of Student-to-Student Counseling on the Academic Adjustment of Potential College Dropouts," Journal of Educational Psychology, 62:285-289, Aug., 1971.

[219]J. W. Hall, "The Effects of Supportive Services for Disadvantaged College Students," Dissertation Abstracts International, 32:3686A-3687A, 7-A, Jan., 1972.

[220]R. Bucklin and M. Bucklin, "A program to Assist Marginal College Freshmen," Journal of the National Association of Women Deans and Counselors, 34:148-150, Summer, 1971; see also L. C. Riess, Project College Bound, A Financial Assistance Program for High School Graduates Attending the 1967 Summer Session (Pasadena City College, 1967); F. C. Pearce, A Study of Academic Success for College Readiness Students at the College of San Mateo, Research Report 1968-2 (College of San Mateo, 1968); see also F. B. Freedman and F. C. Myers, "The College Discovery and Development Program: Disadvantaged Youth Prepare for College," Journal of the National Association of Women Deans and Counselors, 32: 90-95, Winter, 1969; see also M. Melnick, "Higher Education for the Disadvantaged: Summary. Abstracts and Reviews of Research in Higher Education, Number 12" (Center for the Study of Higher Education, Hofstra University, April, 1971),(Washington, D. C.: ERIC Clearinghouse on Higher Education, 1971); see also C. Z. Wilson, "Recruitment, Academic Support, Financial Aid and Some Interrelated Considerations" (paper read at American Personnel and Guidance Association, April, 1969, Las Vegas).

[221]Brown, et al., loc. cit.; see also A. M. Lahn, "Changes in Study Habits and Attitudes during a College Preparatory Program for High Risk Students" (paper presented at the American Personnel and Guidance Association National Convention, 1971, Atlantic City).

[222]Heinkel, loc. cit.

[223]A. Churchman, "The Adaptation to College of High Risk and Standard Risk Students as a Function of Social Comparison Opportunities," Dissertation Abstracts International, 32:3420-3421, 6-A, Dec., 1971.

[224]"Academically Disadvantaged Minority Group Students in Public Two Year Colleges," loc. cit.

[225]J. M. Ziegler, "Disadvantaged Youth and the Two-Year College," (unpublished Report, Nassau Community College, 1967),(College Student Personnel Abstracts, 2:522-523, Summer, 1967).

[226]Heath, loc. cit.

[227]E. A. Naughton, "What You See Is What You Get: Black Student/White Campus," The Extended Campus, ed. D. W. Vermilye(San Francisco: Jossey-Bass, 1972), pp49-66; see also G. I. Joseph, "Black Students on the Predominantly White Campus," Journal of the National Association of Women Deans and Counselors, 32:63-66, Winter, 1969; see also D. Elkind, "From Ghetto School to College Campus: Some Discontinuities and Continuities," Toledo Law Review, 2 & 3:607-614, Spring-Summer, 1970; see also D. L. Haettenschwille, "Counseling Black College Students in Special Programs" (Washington, D. C.: ERIC Clearinghouse on Counseling and Personnel Services, 1970).

[228]A. S. Pruitt, "Black Poor at White Colleges--Personal Growth Goals," Journal of College Student Personnel, 11:3-7, Jan., 1970, see also G. D. Morgan, The Ghetto College Student: A Descriptive Essay on College Youth From the Inner City (Iowa City: American College Testing Program, 1970).

[229]D. Bush, "Disadvantaged Students at College: A New Dimension," AHE College and University Bulletin, 19:2-3,March, 1967; see also J. J. Cardoso, "Ghetto Blacks and College Policy," Liberal Education, 55:263-272, Oct., 1969; L. Berger, "University Programs for Urban Black and Puerto Rican Youth," Educational Record, 49:382-388, Fall, 1968.

[230]Kendrick, "Minority Students on Campus," loc. cit.; see also Brandson, loc. cit.; see also R. L. Williams, "What Are We Learning From Current Programs for Disadvantaged Students?" Journal of Higher Education, 40:274-285, April, 1969.

[231]G. W. Morgan, loc. cit.; see also W. D. Monlouis, "Higher Education Opportunities for the High-Risk Disadvantaged Students: A Review of the Literature," Currents '70, 1:14, Feb., 1970.

[232]Harshbarger, loc. cit.; see also J. Egerton, "High Risk: Five Looks," Southern Education Report, 3:25-36, April, 1968; see also J. Egerton, "High Risk," Southern Education Report, 3:3-14, March, 1968.

[233]Somerville, "Can Selective Colleges Accommodate the Disadvantaged? Berkeley Says 'Yes'," loc. cit.; see also R. K. Kelly, loc. cit.

[234]Harcleroad, loc. cit.

[235]Denmark, Shirk, and Hirsch, loc. cit.

[236]Jensema and Lunneborg, loc. cit.; see also Heinkel, loc. cit.

[237]Heinkel, ibid.

[238]Hendrix, loc. cit.

[239]Raymer, loc. cit.

[240]Somerville, "Minorities in Higher Education," loc. cit.

[241]Hall, loc. cit.

[242]Heath, loc. cit.

[243]Heinkel, loc. cit.

[244]Brown, et al., loc. cit.

[245]R. A. Griesing, "The High-Risk Student," North Central Association Quarterly, 43:328-334, Spring, 1969.

[246]Bucklin and Bucklin, loc. cit.

[247]Riess, loc. cit.

[248]Pearce, loc. cit.

[249]Freedman and Myers, loc. cit.

[250]Melnick, loc. cit.

[251]Churchman, loc. cit.; see also Brown, et al., loc. cit.; see also Lahn, loc. cit.

[252]J. Bowers, "The Comparison of GPA Progression Equations for Regularly Admitted and Disadvantaged Freshmen at the University of Illinois," Journal of Educational Measurement, 7:219-225, Winter, 1970.

[253]Denmark, Shirk, and Hirsch, loc. cit.; see also J. Bowers "The Evaluation of a Special Educational Opportunities Program for Disadvantaged College Students. Final Report" (Illinois University, Urbana, Office of Education (DHEW), Washington, D. C.: Bureau of Research), (Washington, D. C.: ERIC Clearinghouse on Higher Education, June, 1971).

[254]S. R. Beasley, "The Use of Biographical Data as a Predictor of Academic Success for Minority Students at the University of Colorado," Dissertation Abstracts International, 32:6753-A, 12-A, June, 1972.

[255]Egerton, "High Risk: Five Looks," loc. cit.

[256]L. R. Beach, Identifying the Potentially Successful Among Marginal College Entrants. Final Report (Office of Education (DHEW), Washington, D. C., Bureau of Research, August, 1968).

[257]Jensema and Lunneborg, loc. cit.

[258]Pearce, loc. cit.

[259]L. T. Hammond and D. C. Rosick, "Problems of Prediction With College Education Achievement Project Students at Allen University" (paper presented at the Annual Meeting of American Educational Research Association, Feb., 1971, New York).

[260]P. F. Hodges, "Prediction of College Success for Disadvantaged and Typical College Students, Dissertation Abstracts International, 32: 2985B-2986B, 5B, Nov., 1971.

[261]A. M. Cherdack, "The Predictive Validity of the Scholastic Aptitude Test for Disadvantaged College Students Enrolled in a Special Education Program. Final Report," loc. cit.